FIG. 22 illustrates another embodiment of probe working end **660** that utilizes the same principles in a tissue-clamping arrangement. The working end again defines an engagement plane **625** that has a conductive surface engagement portion **640A** comprising a plurality of axial conductive strips. Also exposed in the engagement plane are portions of the compressible medial conductive portion **640B**. Again, the medial conductive portion **640B** is silicone-based PTC-type material as described above in relation to FIGS. 8-13, and 20-21. (Alternatively, the surface **625** can be a thin microporous metallic coating). FIG. 22 shows a core conductive portion (electrode) **640C** covered by the medial conductive portion **640B**. The core conductive portion **640C** is coupled to electrical source **150A** and controller **150B**, as described previously. The embodiment of FIG. 22 has the medial conductive portion **640B** coupled to a lumen (not shown) that is adapted to deliver saline flow from fluid source **642**.

The probe working end **660** has a first jaw portion **672a** that carries the above described functional components of the invention attached to any suitable jaw body indicated at **668**. The jaw body **668** is of an insulated material or a metal with a non-conductive coating. The second jaw portion **672b** is moveable about a pivot (not shown) to close against the first jaw **672a** as indicated by the arrow in FIG. 22. The tissue-engaging surface of the second jaw portion preferably is a non-conductive material. Any suitable jaw opening-closing mechanism known in the art can be used with either one both jaws being actuatable from an instrument handle. It can be understood that by closing the jaws to clamp a targeted tissue volume therebetween, the silicone-based medial conductive portion **640B** will compress inwardly, depending on the density selected. If the open cells of the medial conductive portion **640B** are collapsed to any substantial extent as the jaws are compressed, the flow of saline through medial conductive portion **640B** will be restricted thus altering the temperature coefficient of resistance of the medial conductive portion **640B**. FIGS. 23A-23B illustrate schematically the potential for fluid flow through the medial conductive portion **640B**, with FIG. 23A indicating that open cells **674** allow fluid flow therethrough. It can be easily understood from FIG. 23B that a compression of medial conductive portion **640B** can collapse the cells **674** which in turn will restrict fluid flow. Thus, the system can be designed with (i) selected conductive doping of medial conductive portion **640B** and (ii) selected conductivity of the saline solution to optimize the temperature coefficient of the material under different compressed and uncompressed conditions for any particular thermally-mediated therapy. The medial conductive portion **640B** can be designed to be a

positive or negative temperature coefficient material (defined above) as the material expands to a repose shape after being compressed. For example, one thermal treatment using the jaws of FIG. 22 can be to seal or coagulate engaged tissue. The resilient engagement surface **625** can naturally expand to remain in substantial contact with the tissue surface as the tissue is sealed and dehydrates and shrinks. At the same time, the cell structure of the medial conductive portion **640B** would tend to open to thereby increase fluid flow the engagement plane, which would be desirable to maintain active and passive conductive heating of the tissue. Also at the same time, the selected temperature coefficient of the medial conductive portion **640B** in combination with the saline volume therein can insure that active Rf heating is modulated as exactly described in the Types "A" and "B" embodiments above with any selected switching range.

7. Type "F" probe for energy delivery to tissue. FIG. 24 illustrates alternative a Type "F" probes **700** that correspond to the invention. The working end of the probe differs from the Type "A" embodiment, for example, in that an additional control mechanism is added to the system. FIG. 24 shows a needle-type probe member **720** that defines engagement plane **725** extending about its distal surface. The conductive surface engagement portion **740A** and medial conductive portion **740B** are as described previously. The medial conductive portion **740B** again is a PTC-type material adjacent the core conductive (electrode) **740C**. In this embodiment, referring to FIG. 24, the system has independent (insulated) electrical leads **745a** and **745b** extending through the probe that are coupled to medial conductive portion **740B**. The leads are connected to a DC source **750** and controller **150B**.

The purpose of the DC delivery application mechanism is to provide independent control means for modulating the temperature of medial conductive portion **740B**. The DC system can be used to instantly alter the temperature of a PTC or NTC material, for example, to terminate Rf energy application or for other similar control purposes. Another purpose of such a DC system would be to shift the switching range to a higher or lower range. Another embodiment (not shown) can use photonic energy application means to alter the resistance of an optically sensitive medial conductive layer **740B** for similar purposes.

6. Type "G" probe for energy delivery to tissue. FIGS. 25 and 26 illustrate the working end of a Type "G" probe **800** corresponding to the invention. The probe again is adapted for controlled energy delivery to tissue utilizing a

variably resistive matrix that is dependent on its temperature—but this embodiment comprises the working end **822** of a probe (e.g., a catheter) that is adapted for introduction into a lumen, space, or cavity in or about the patient's body. The working end defines an engagement plane **825** that extends around the circumference of the probe. The embodiment of FIG. 25 has a conductive surface portion **840A** that overlies the variably resistive matrix indicated at **840B**. The core electrode **840C** can be a flexible conductive tube or wire, or a flexible polymer with a metallic coating that serves as an electrode. While the probe **800** is shown as being flexible for endoluminal navigation, the probe shaft also can be rigid for introducing into a joint capsule or similar body space.

The Type "G" probe is adapted for operation in an environment in which the targeted tissue **tt** is exposed to fluid environment, wherein the term fluid is defined as any flowable media such as a liquid or a gas. The variably resistive matrix **840B** can be a positive temperature coefficient material (PTC) or a negative temperature coefficient material (NTC), depending on the operating environment. Either a PTC or NTC material has the characteristic that its temperature—and therefore its selected switching range—can extend over only a highly localized portion of the working end. Thus, in operation, one portion of the variably resistive matrix **840B** can be substantially resistive while another portion can be substantially conductive.

As one example of such a Type "G" probe, FIG. 25 depicts the working end **822** in a patient's heart in a catheter ablation treatment to correct an arrhythmia. Supraventricular tachycardia (SVT) is a general term describing any rapid heart rate originating above the ventricles, or lower chambers of the heart. SVT is an arrhythmia, or abnormal heart rhythm, that includes atrial fibrillation, AV nodal re-entrant tachycardia, and Wolff-Parkinson-White syndrome. SVT can occur for a number of reasons, including abnormalities of the heart's electrical conduction system. Rf catheter ablation can correct an arrhythmia by creating lesions, for example, in the atrial wall to eliminate alternate conductive pathways in the heart that interfere with the normal conduction pathways. The objectives of such an Rf ablation are to create a full-depth lesion in the targeted wall with as little collateral damage as possible. Further, it is important that such Rf ablation does not char the tissue or coagulate blood which can create embolic material. Such emboli can migrate downstream and cause a stroke or other ischemic event.